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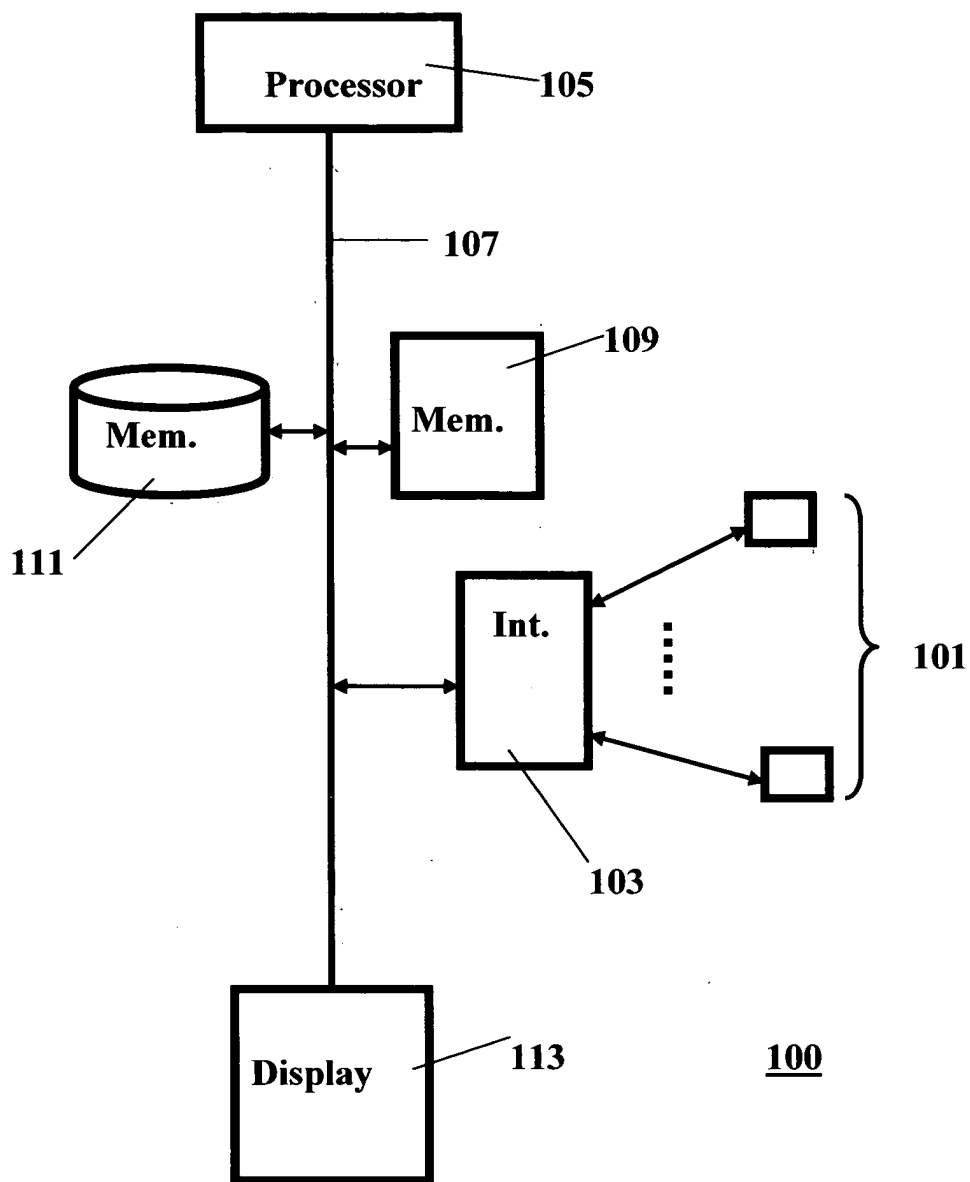


FIG. 1

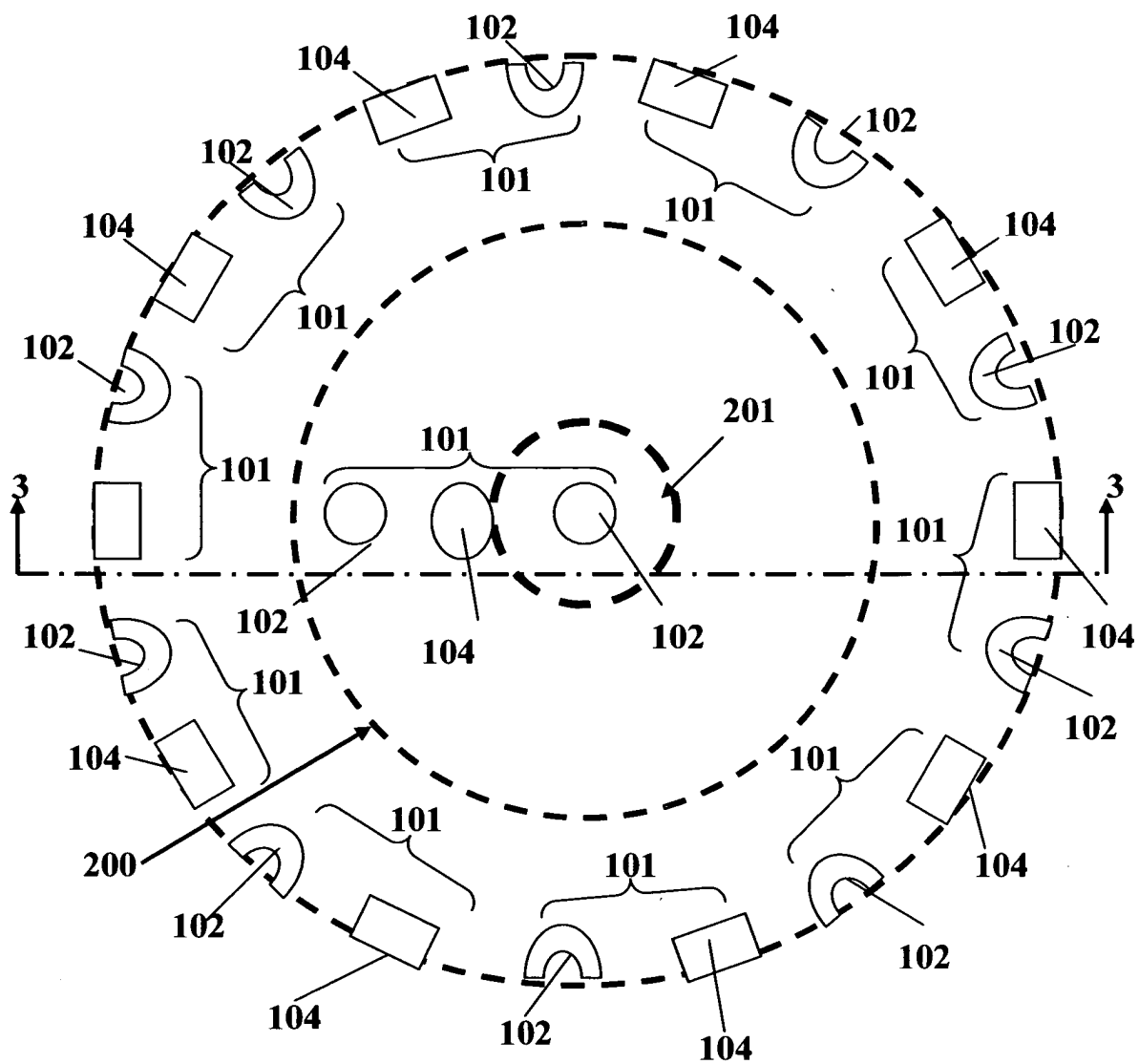


FIG. 2

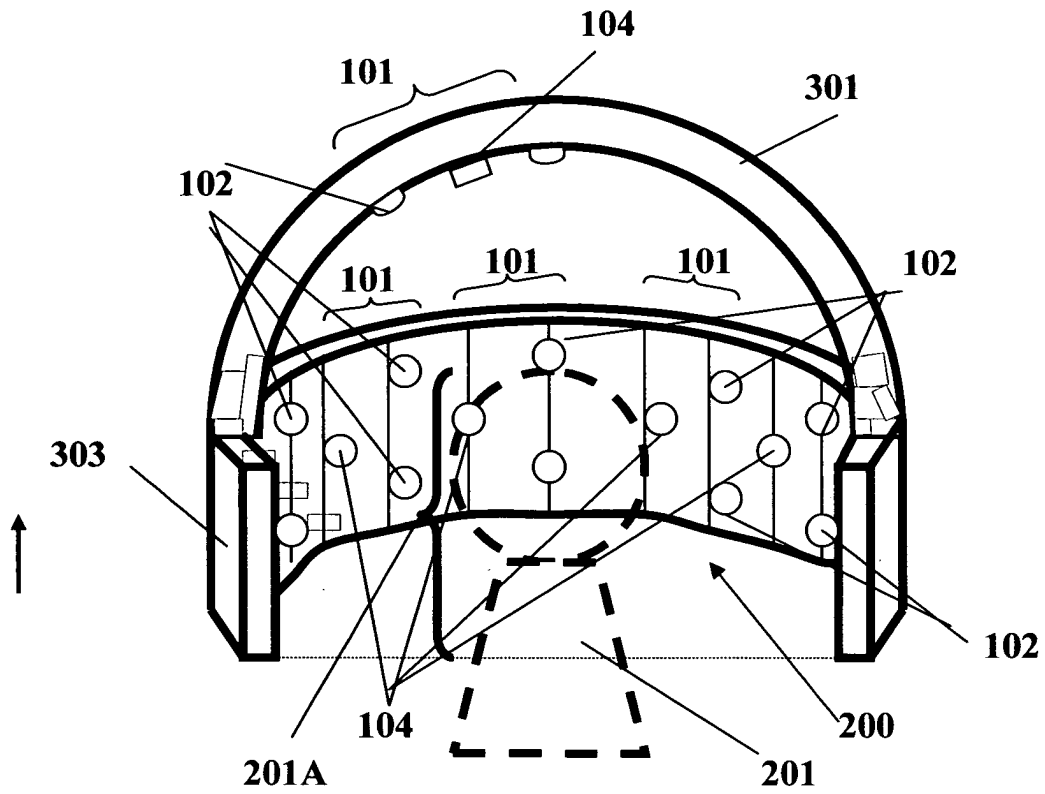
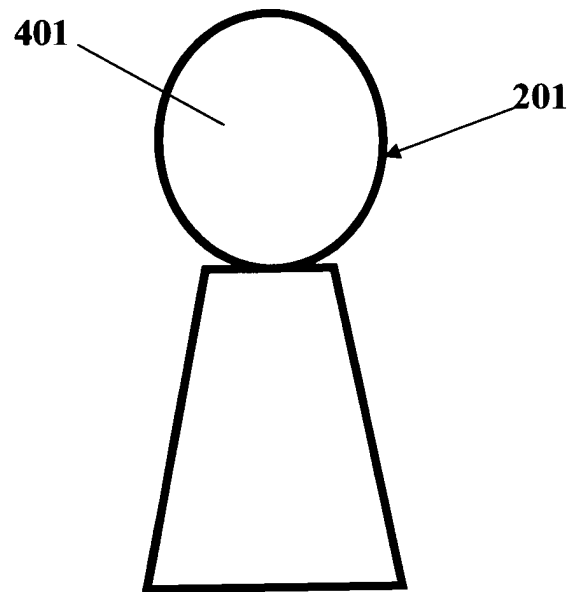
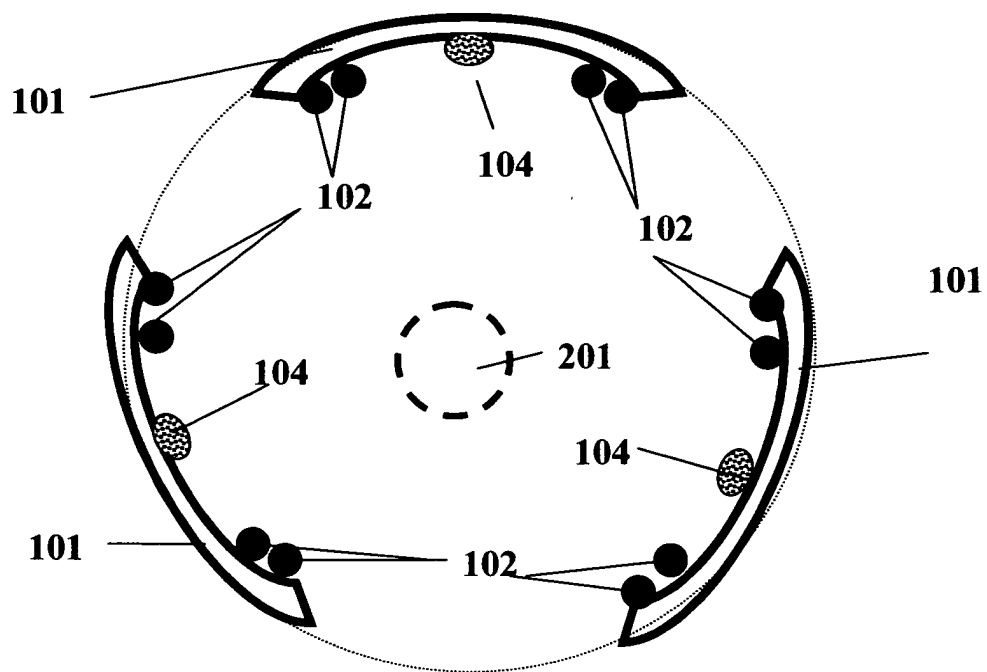


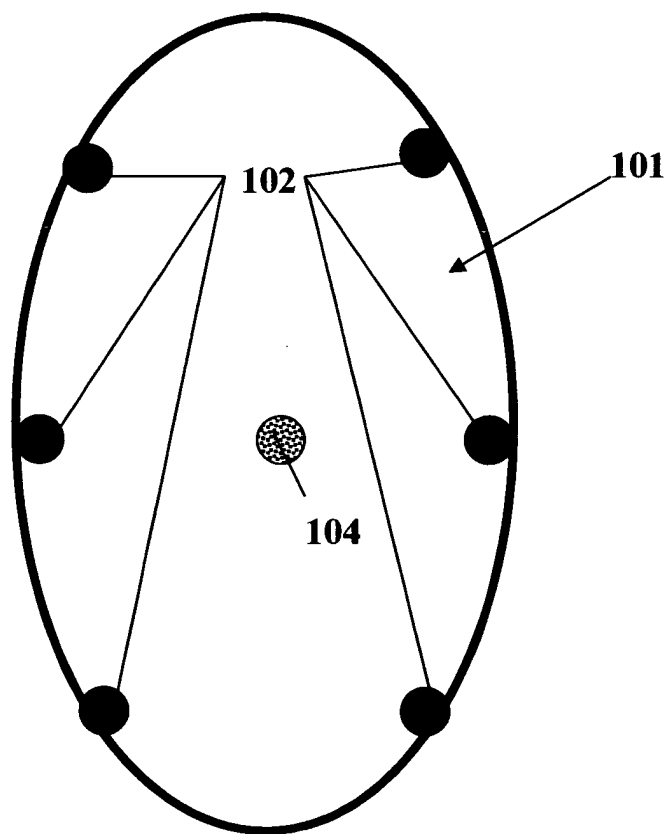
FIG. 3



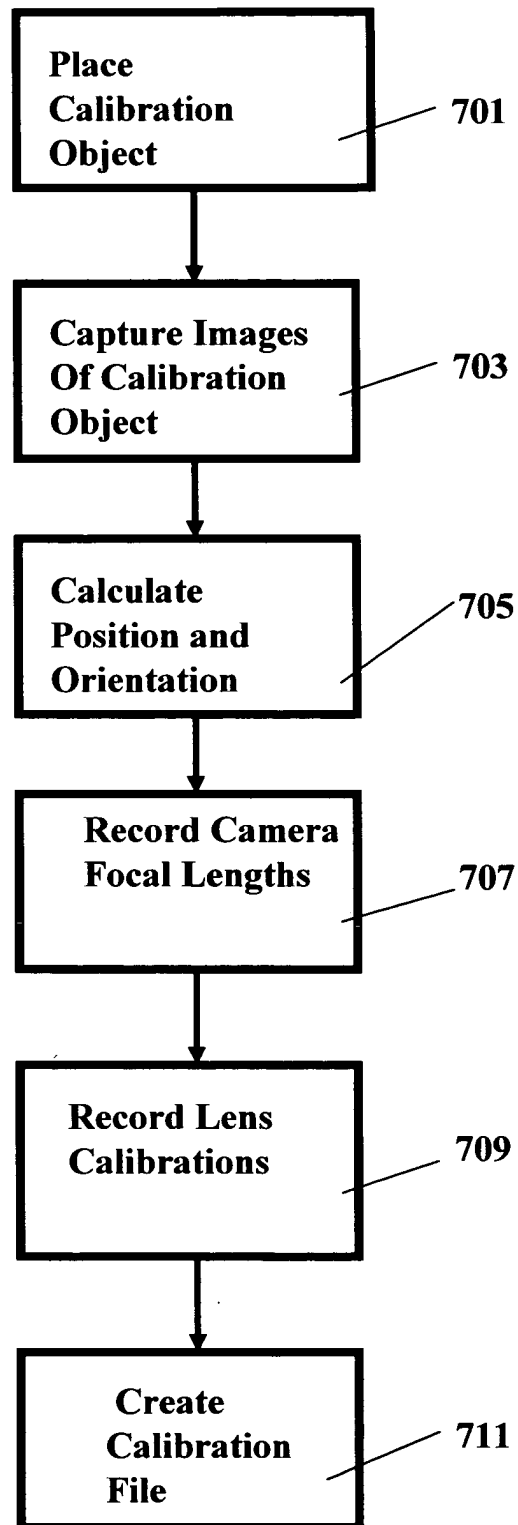
**FIG. 4**



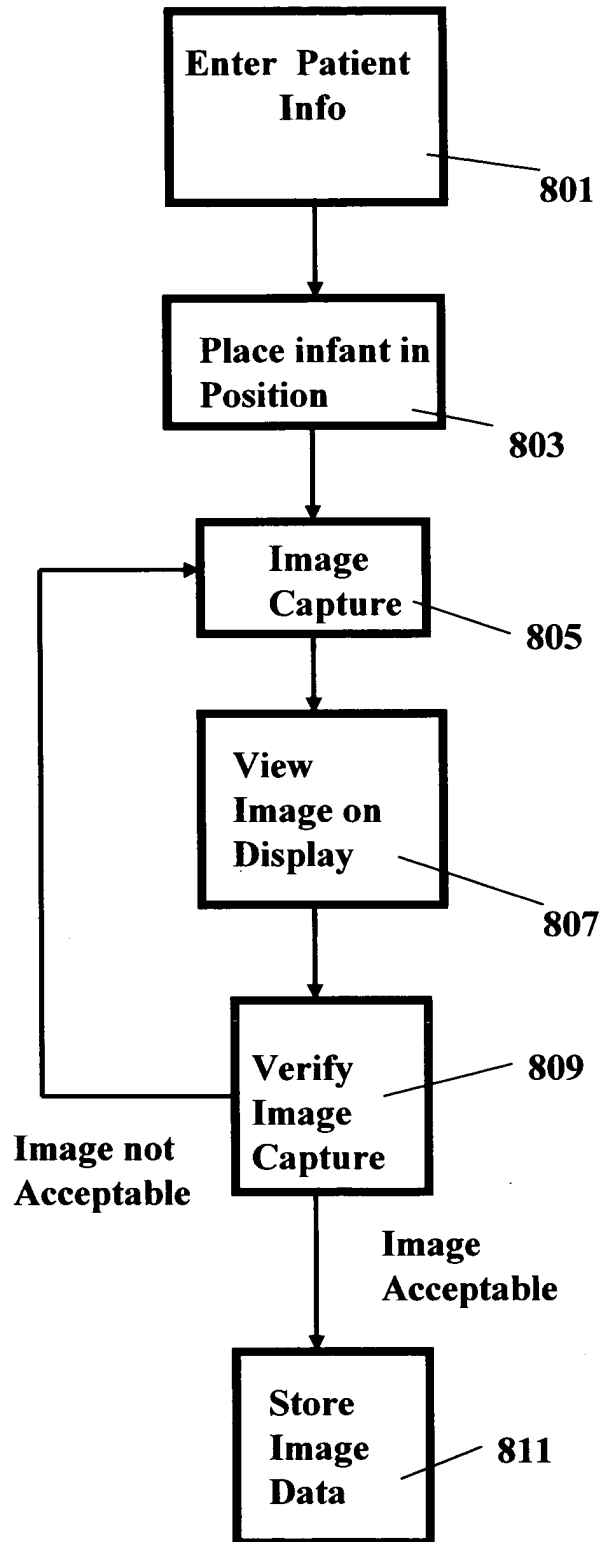
**FIG. 5**



**FIG. 6**

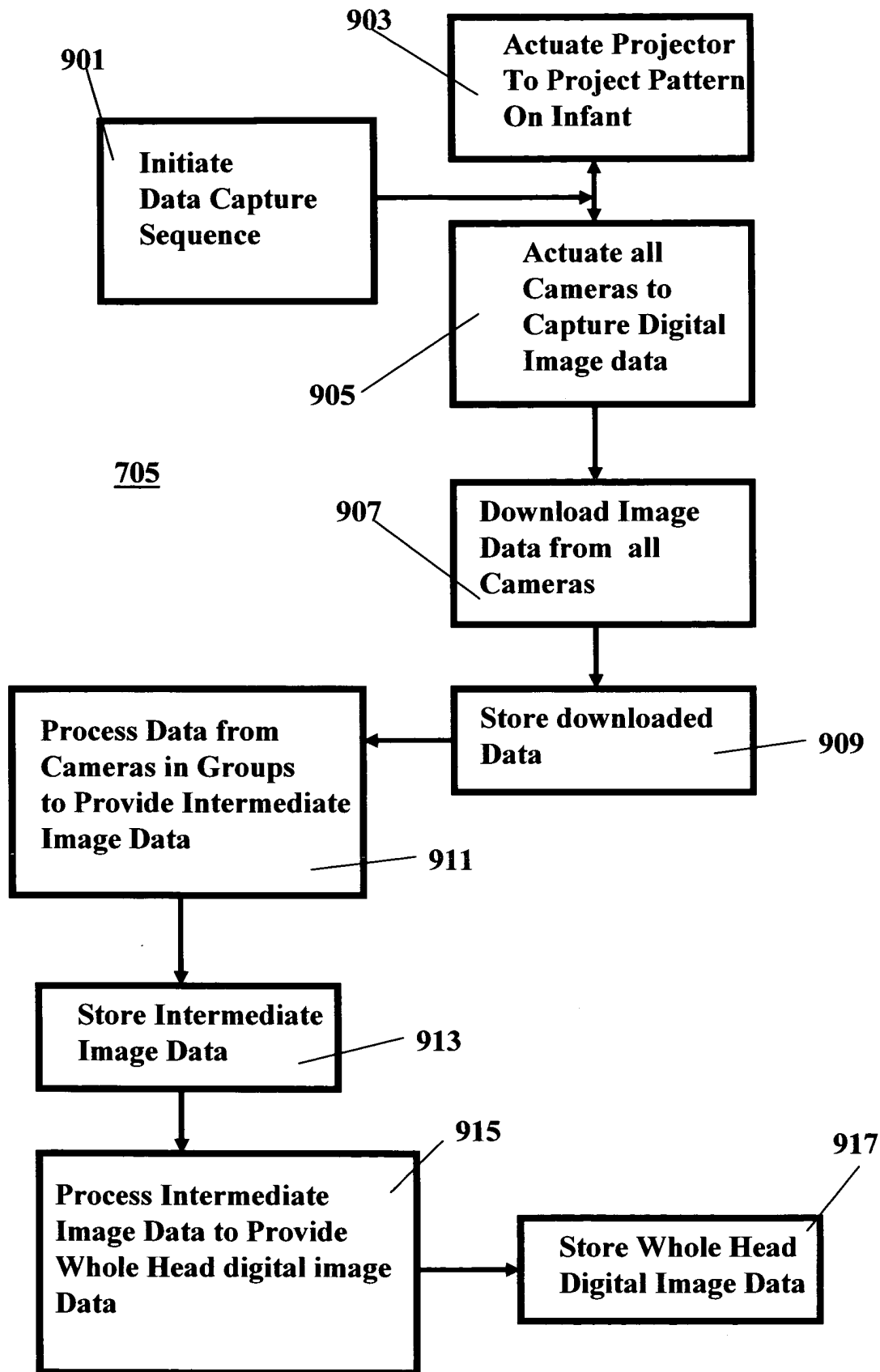


**FIG. 7**

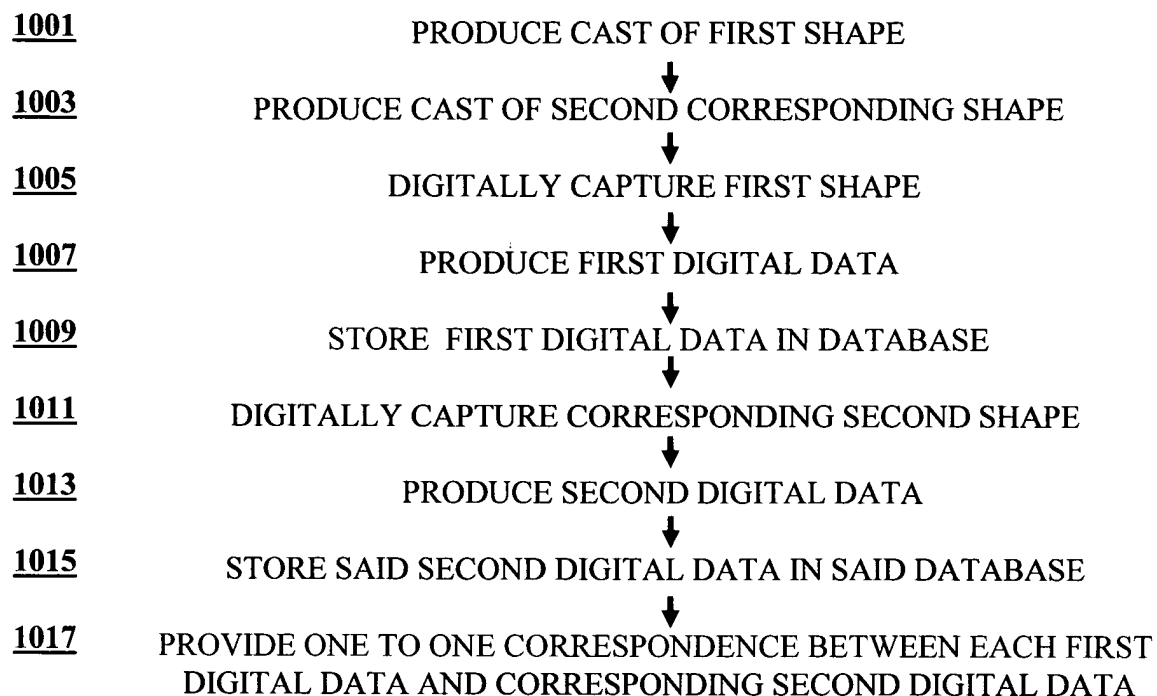


**FIG. 8**

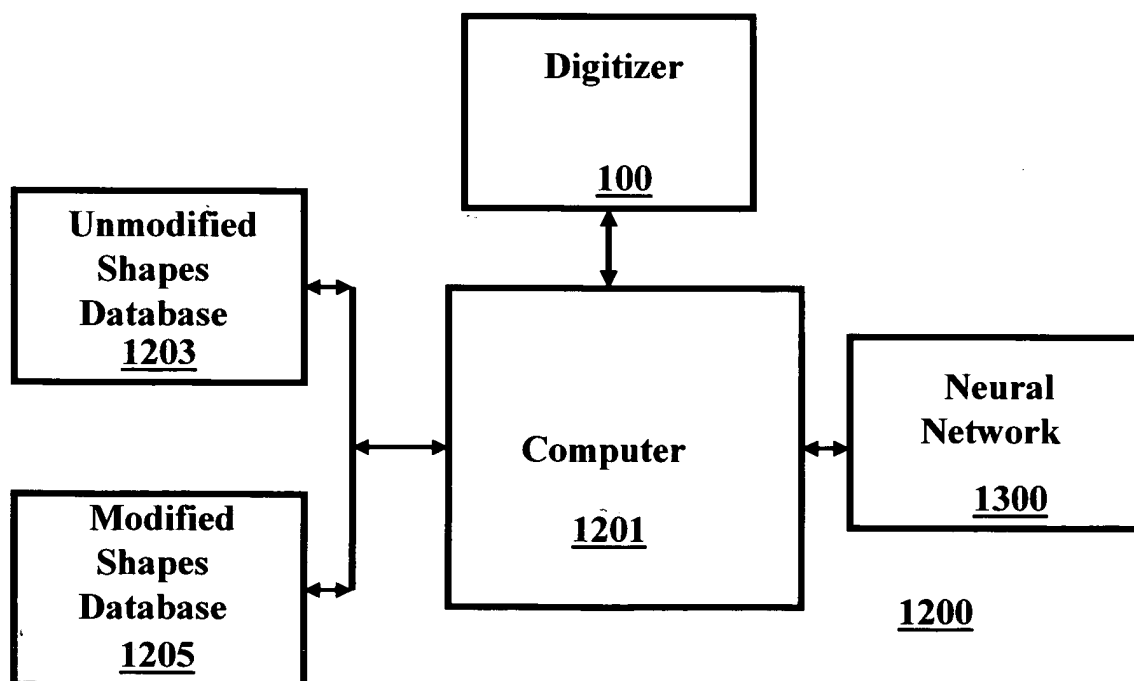




**FIG. 9**



**FIG. 10**



**FIG. 11**

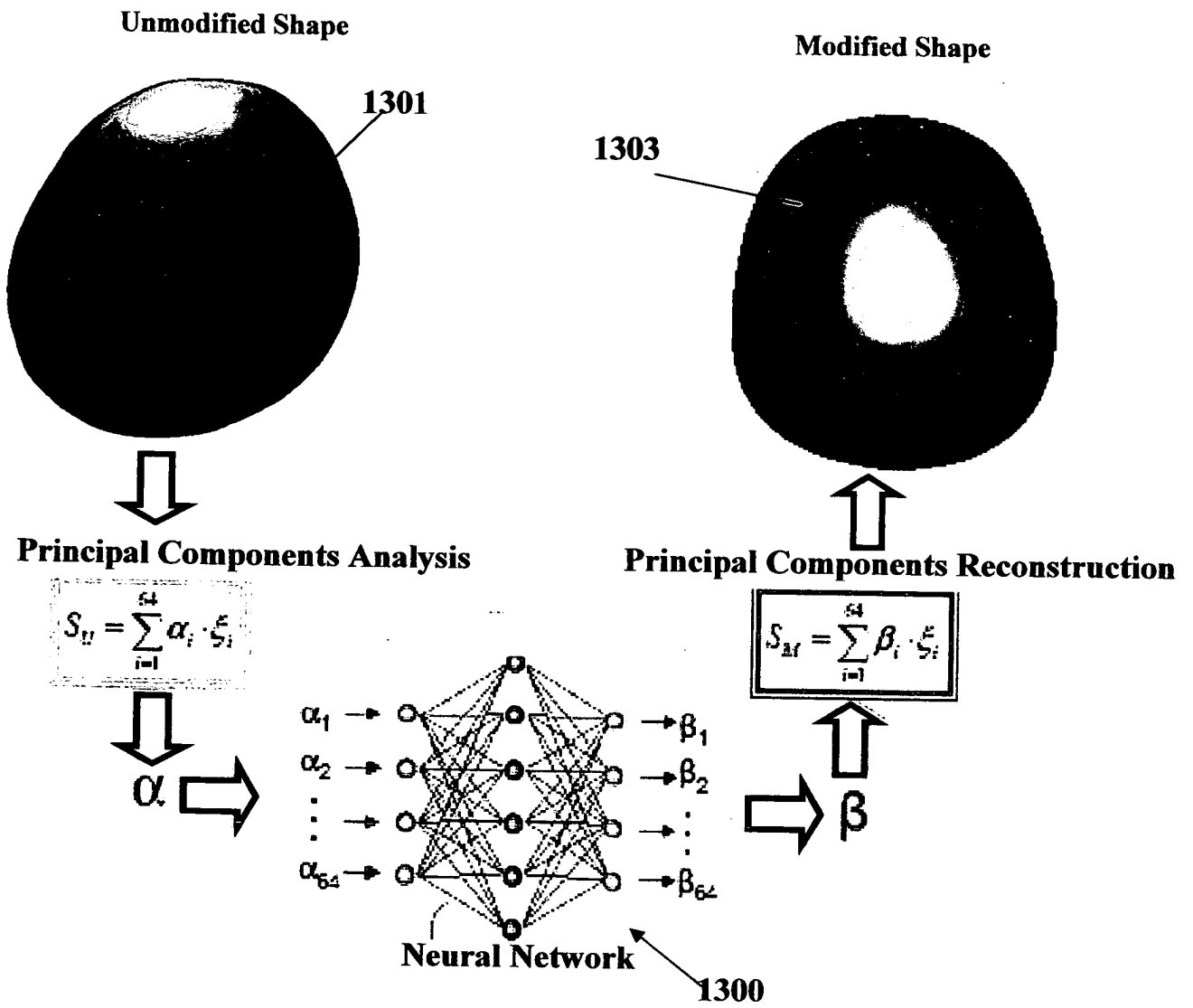


FIG. 12

**1401** PROVIDING A DATABASE OF FIRST OR UNMODIFIED SHAPES



**1403** PROVIDING A DATABASE OF CORRESPONDING SECOND  
OR MODIFIED SHAPES



**1405** ALIGNING EACH OF SAID FIRST OR UNMODIFIED SHAPES TO  
THE SAME ORIENTATION



**1407** ALIGNING EACH SECOND OR MODIFIED SHAPES AND THE  
CORRESPONDING FIRST OR UNMODIFIED SHAPE



**1409** NORMALIZE DATA



**1411** UTILIZING PRINCIPAL COMPONENT ANALYSIS WITH  
ALIGNED FIRST OR UNMODIFIED SHAPES AND  
CORRESPONDING ALIGNED SECOND OR MODIFIED  
SHAPES TO DETERMINE PCA COEFFICIENTS



**1413** PROVIDING OR MORE NEURAL NETWORK



**1415** TRAINING NEURAL NETWORK WITH A LEAST SQUARES  
SUPPORT VECTOR MACHINE



**1417** UTILIZING TRAINED NEURAL NETWORK TO  
OPERATE ON A NEW UNMODIFIED SHAPE TO  
PRODUCE A CORRESPONDING MODIFIED SHAPE

**FIG. 13**

Hyperparameter		
PCA Coefficient	Gamma	Sigma
1	20	33
2	32	77
3	17	107
4	68	86
5	47	47
6	32	122
7	62	62
8	92	92
9	56	134
10	77	77
11	62	50
12	92	92
13	62	92
14	77	152
15	77	77
16	107	62
17	77	62
18	137	32
19	77	62
20	68	47
21	92	62
22	107	77
23	173	83
24	122	62
25	122	122
26	62	107
27	62	92
28	122	68
29	182	116
30	182	128
31	92	38
32	182	92
33	182	92
34	152	152
35	182	92
36	182	122
37	128	122
38	152	152
39 – 64	160	125

**FIG. 14**

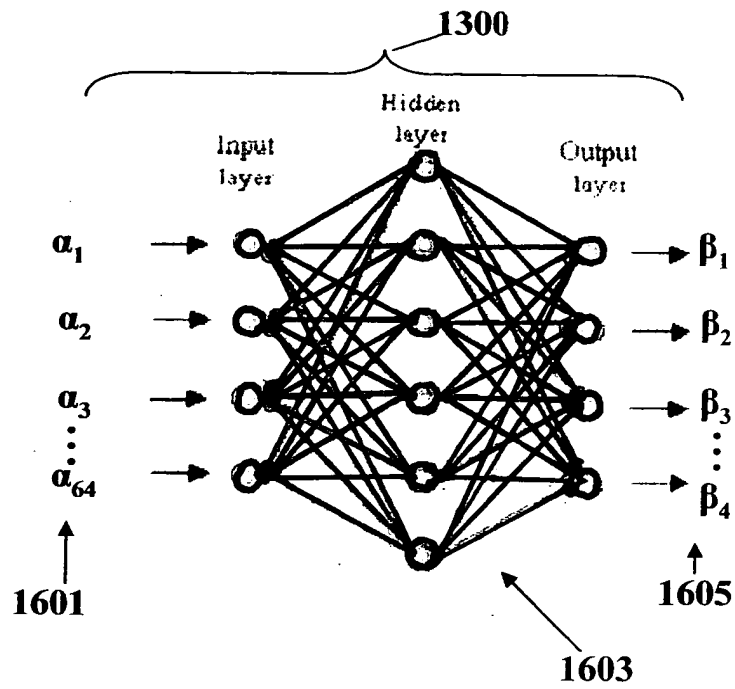


FIG. 15

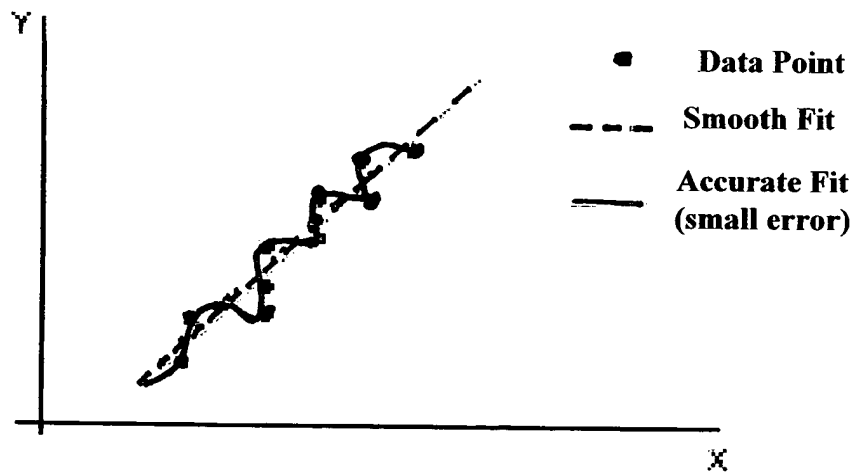
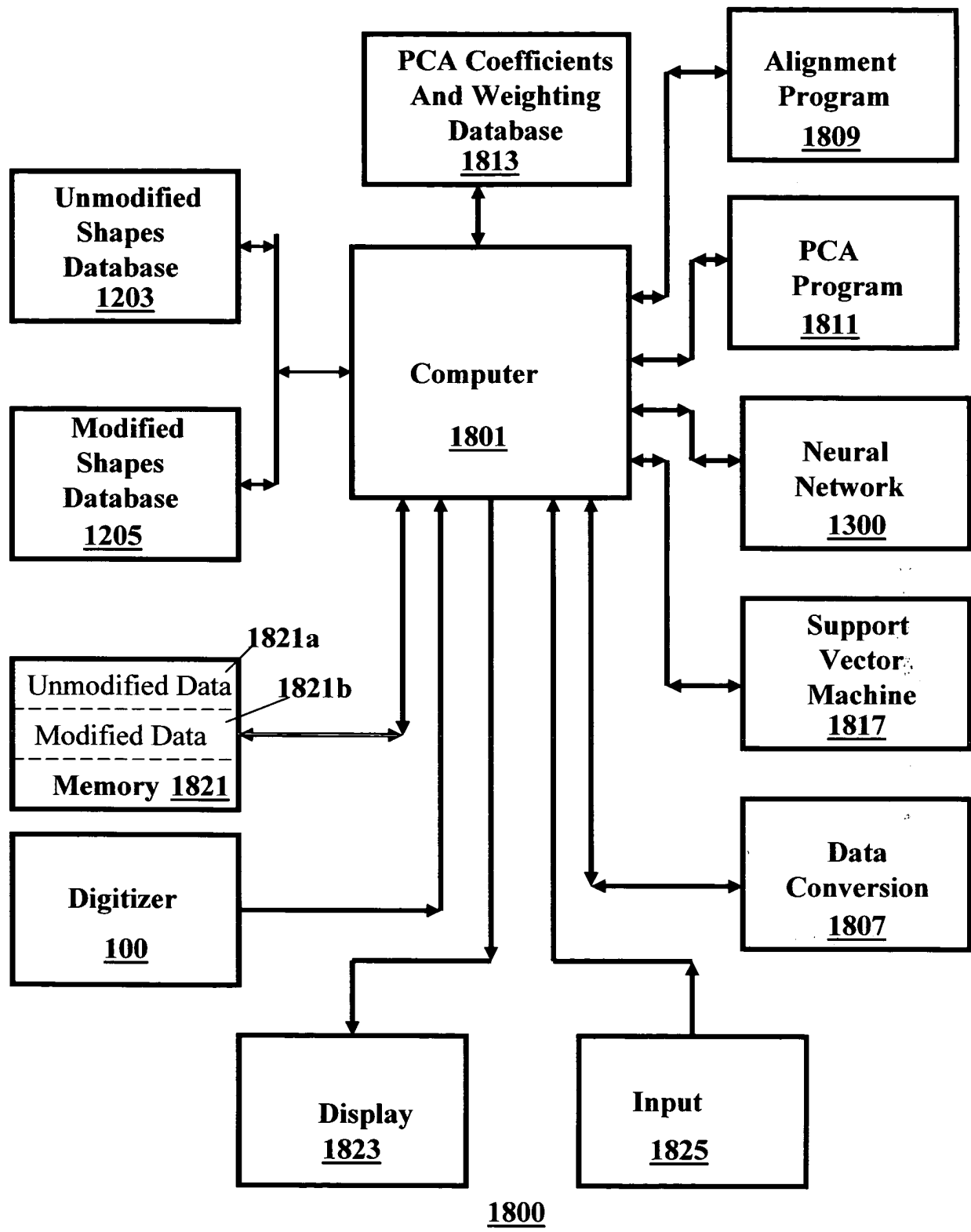
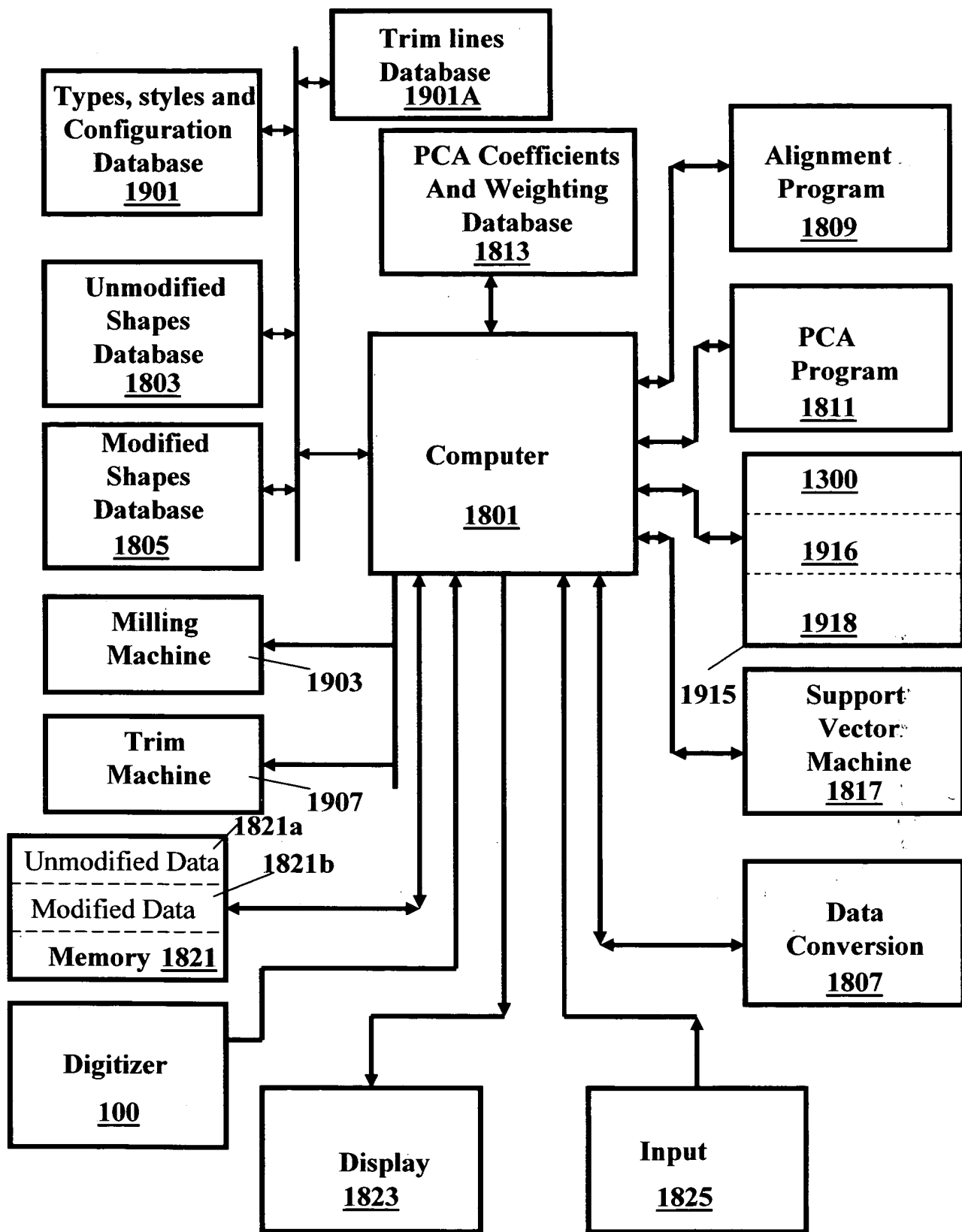


FIG. 16



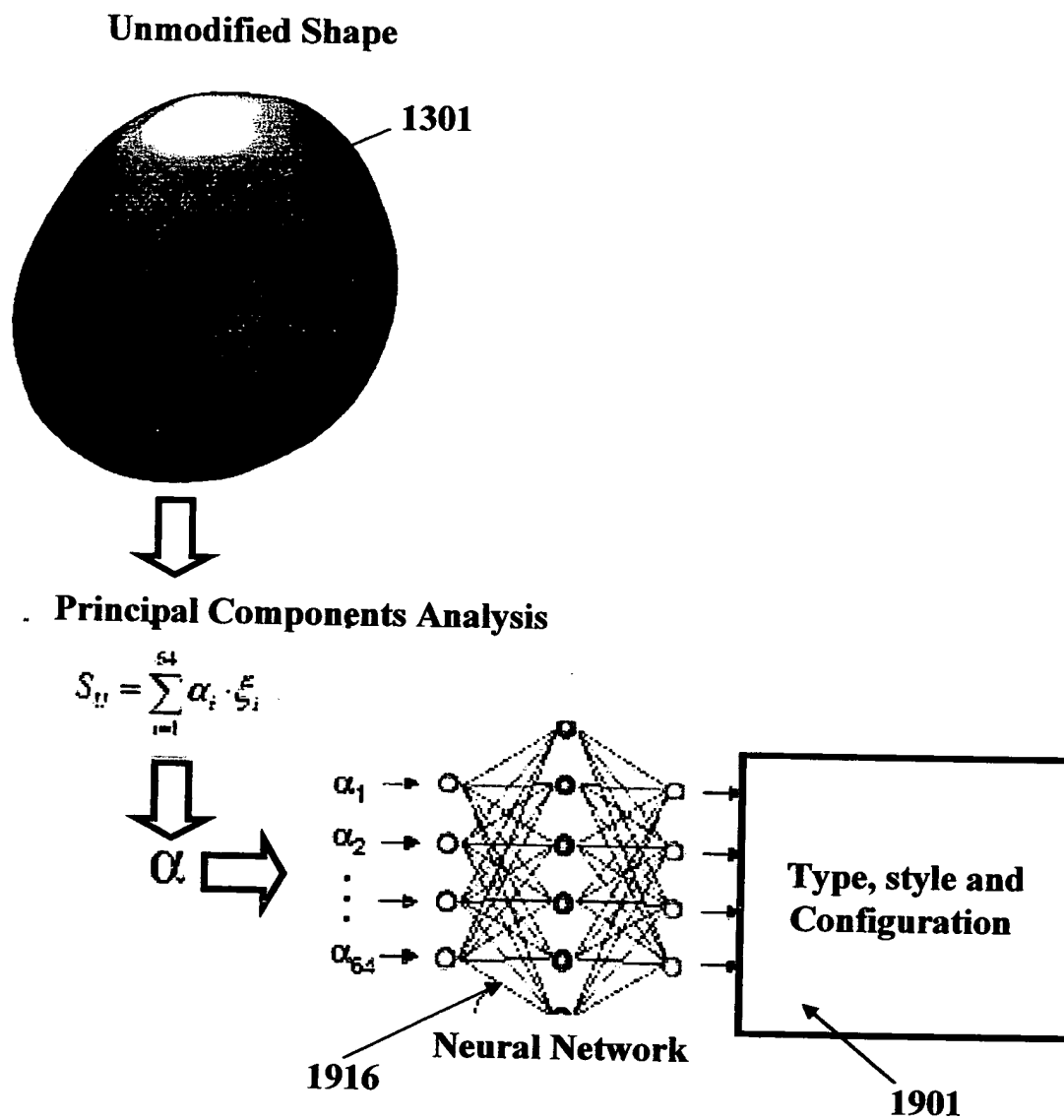
**FIG. 17**



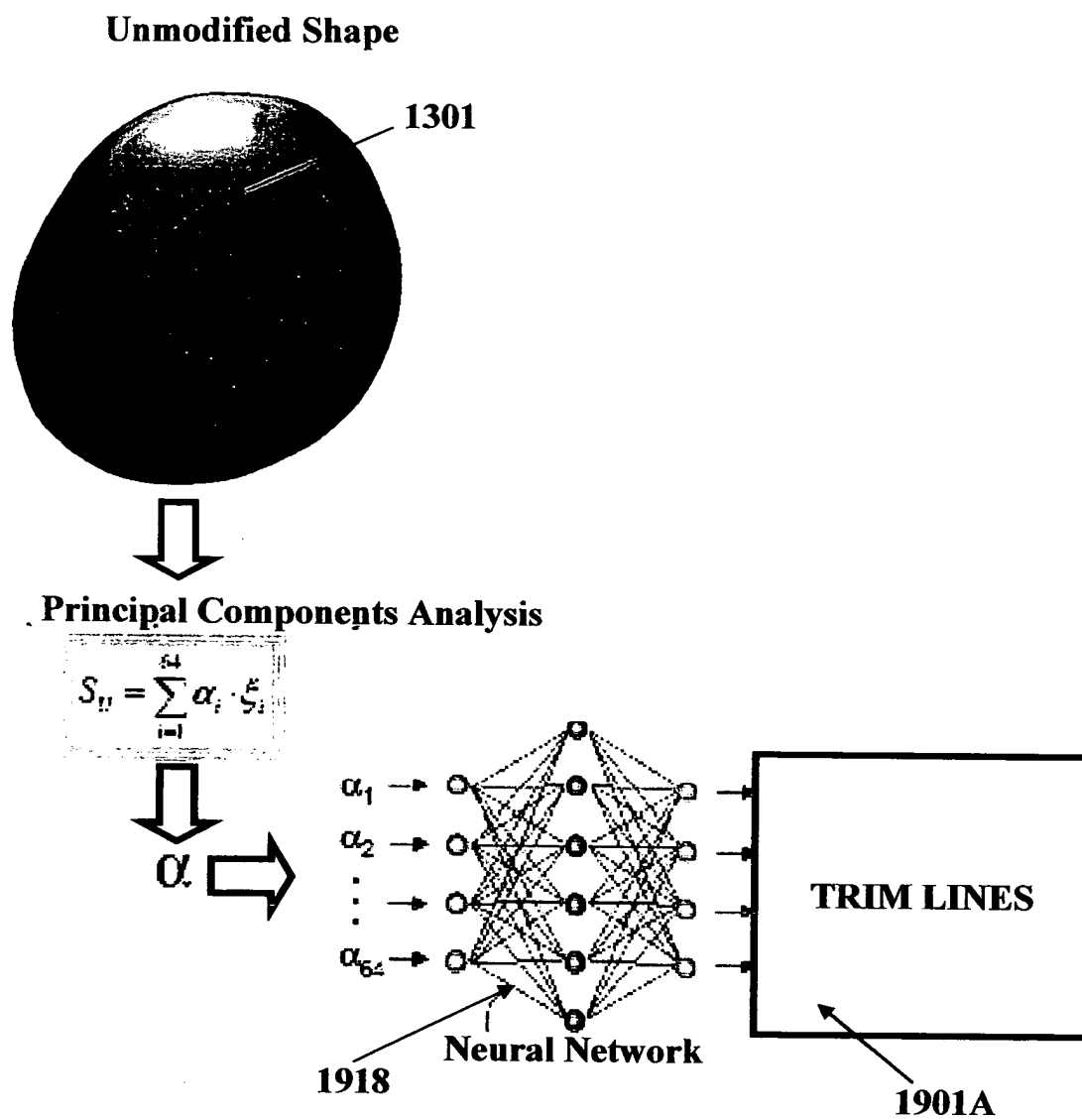
1900

FIG. 18

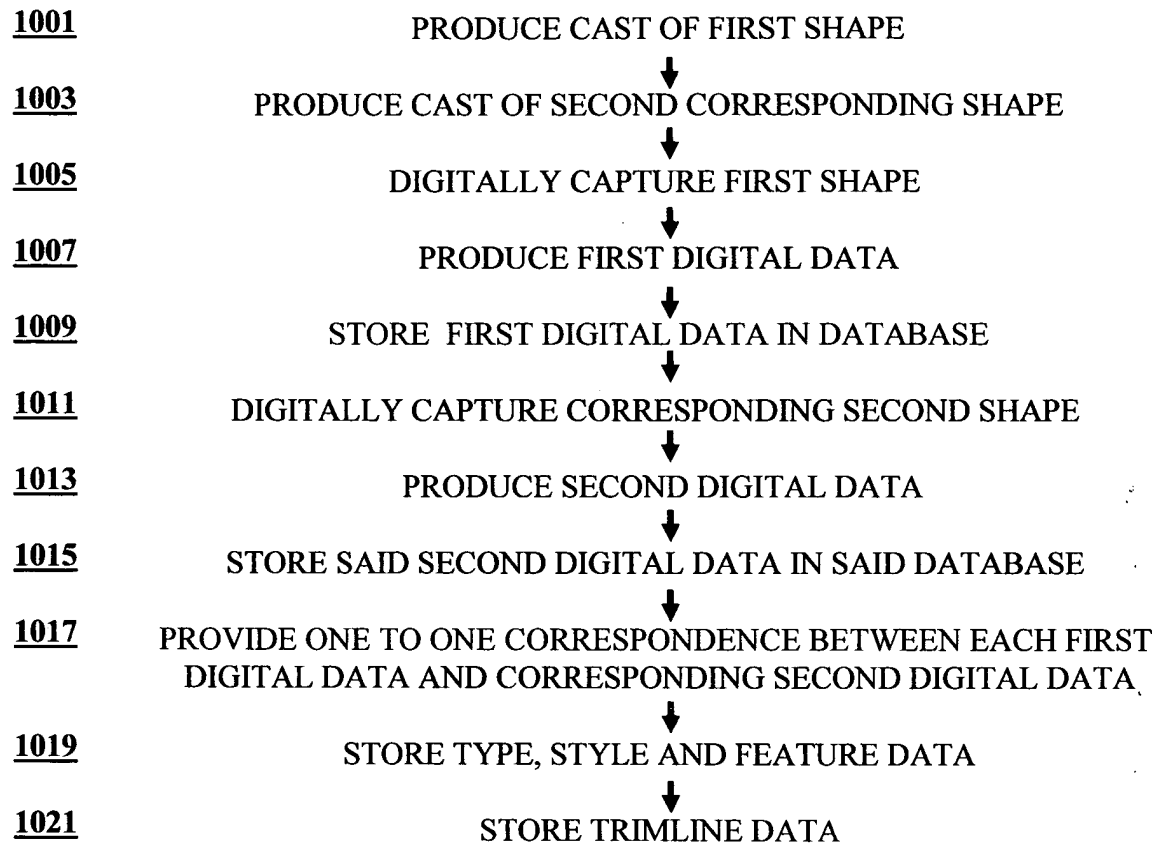




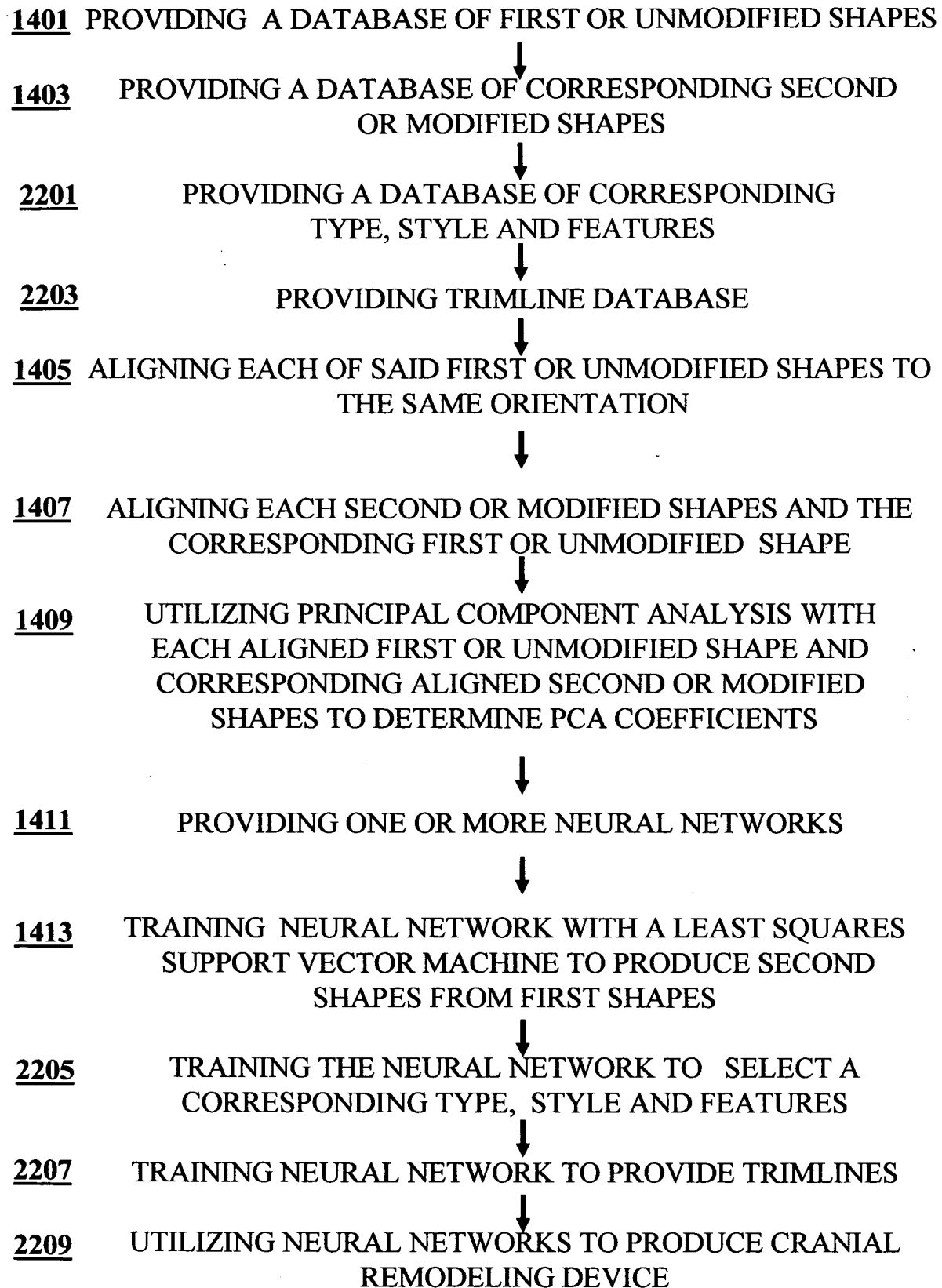
**FIG. 19**



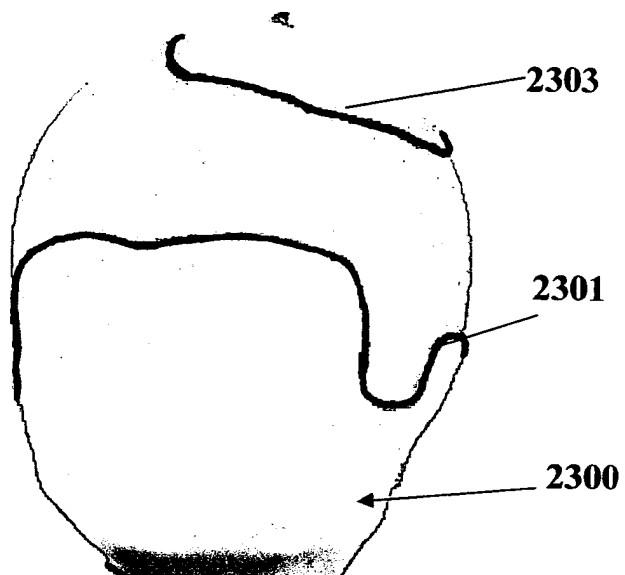
**FIG. 20**



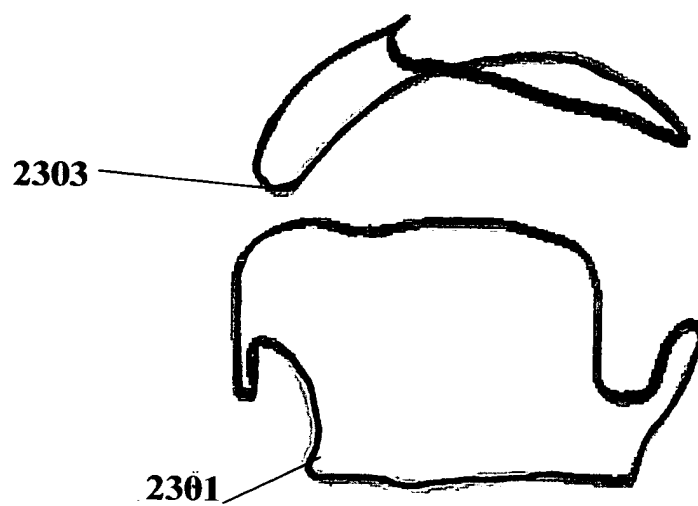
**FIG. 21**



**FIG. 22**



**FIG. 23**



**FIG. 24**

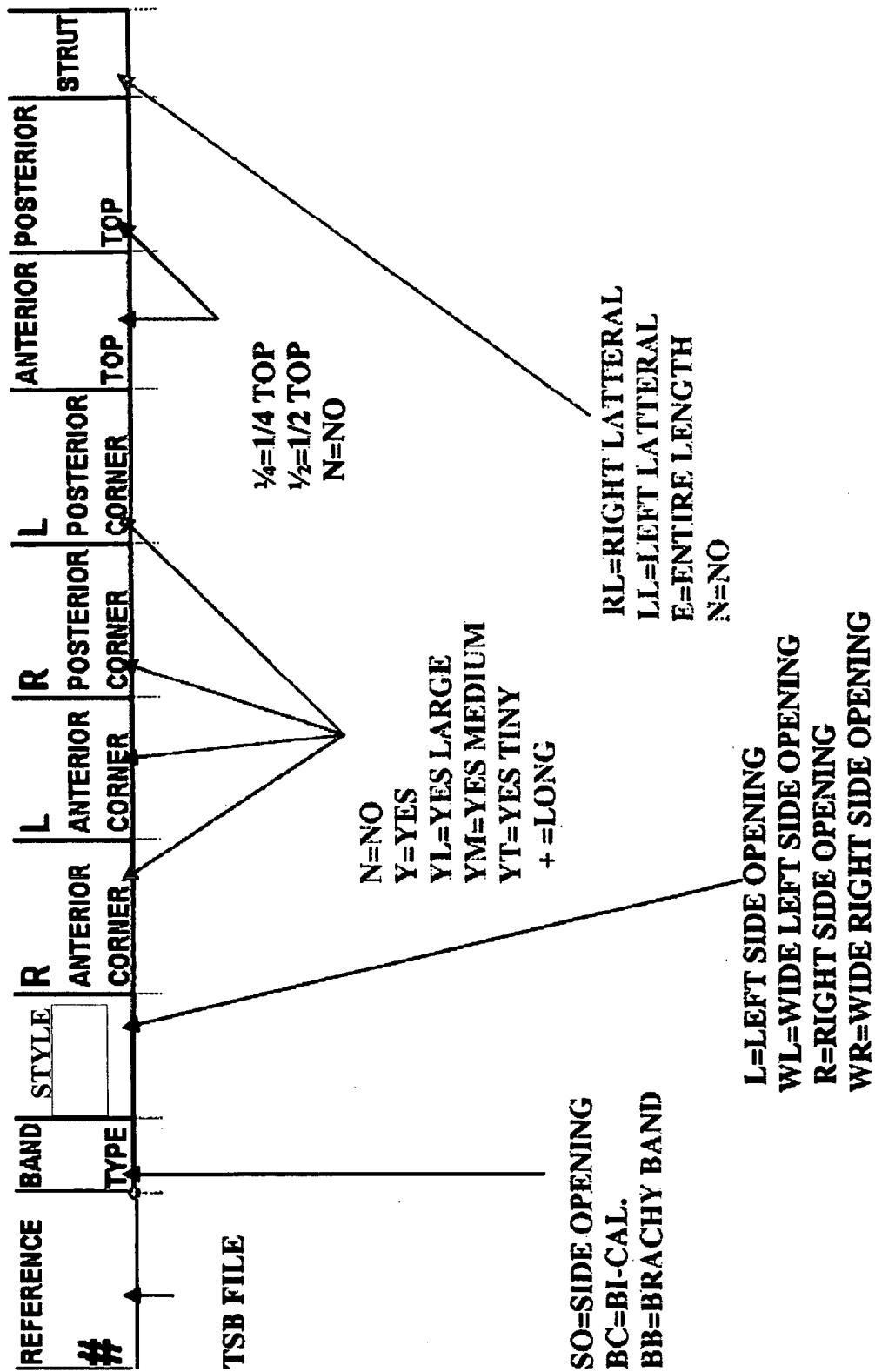


FIG. 25